DOCUMENT RESUME

ED 372 144 UD 029 983

TITLE	Partnerships for Minority Student Achievement Program (PMSA).
INSTITUTION	National Science Foundation, Washington, DC. Directorate for Education and Human Resources.
PUB DATE	93
NOTE	13p.
PUB TYPE	Reference Materials - Directories/Catalogs (132)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Academic Achievement; Elementary Secondary Education; *Mathematics Education; *Minority Groups; *Partnerships in Education; *Program Descriptions; Public Schools; School Districts; *Science Education; Staff Development; Teacher Education; *Urban Schools
IDENTIFIERS	National Science Foundation; Reform Efforts

ABSTRACT

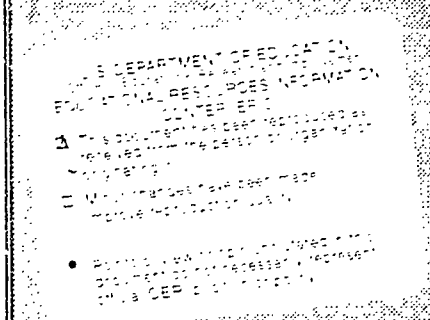
This packet of materials describes the Partnerships for Minority Achievement (PMSA) Project of the National Science Foundation (NSF). PMSA is a comprehensive precollege program that builds on the NSF strategy of forging alliances and partnerships for systemic reform. The partnerships identify successful models in the public and private sectors to support their replication. Projects attempt to increase the participation of minority students in science and mathematics and contain teacher-enhancement and staff-development components. A list is provided of project directors for fiscal years 1992 and 1993 in nine public school districts. A map identifies these project sites. Abstracts then describe activities at each of the sites, as follow: (1) Prince George's County Public Schools (Maryland); (2) Durham Public Schools (North Carolina); (3) Santa Ana Unified School District (California); (4) Rochester City Schools (New York); (5) New Haven City School District (Connecticut); (6) Normandy School District, Saint Louis (Missouri); (7) Los Angeles Unified School District (California); (8) Brownsville Independent School District (Texas); and (9) Chattanooga Public Schools (Tennessee). (SLD)

NATIONAL SCIENCE FOUNDATION
DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES
DIVISION OF HUMAN RESOURCE DEVELOPMENT

PARTNERSHIPS FOR MINORITY STUDENT ACHIEVEMENT PROGRAM

(PMSA)

1993



Directory of Principal Investigators
Map of Award Sites
Project Awards

Division of Human Resource Development
Partnerships for Minority Student Achievement (PMSA)
Project Directors' Listing

FY 1992

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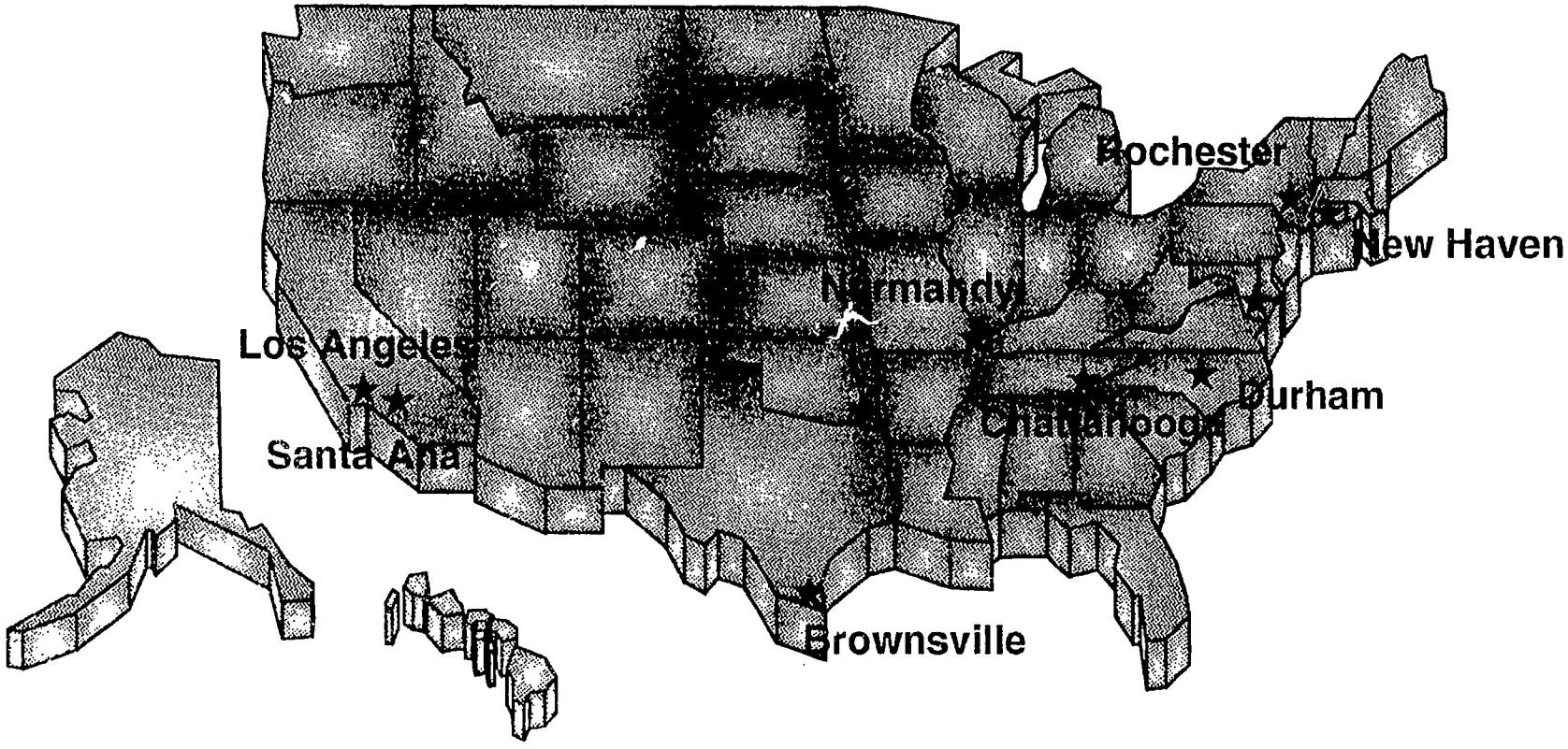
PARTNERSHIPS FOR MINORITY STUDENT ACHIEVEMENT



The Partnerships for Minority Student Achievement (PMSA) program isa comprehensive precollege program that builds on NSF's strategy of forging alliancesand partnerships for systemic reform. Partnerships are intended to -

- Focus on the needs of underrepresented minority students.
- Require the direct participation of the school system as the unit of change.
- Provide support for an integrated systemic approach to enhancing all major components of the educational system.
- Actively identify successful models in the public and private sector and support their replication.

Directorate for Education and Human Resources
Division of Human Resource Development

Partnerships for Minority Student Achievement (PMSA)
FY 1992
Project Abstracts

HRD-9255364
Waynant, Louise
Prince George's County
Public Schools
Upper Marlboro, MD

"Partnerships for Minority Student Achievement In Science and Mathematics in Prince George's County"

Partnerships for Minority Student Achievement in the Prince George's County Maryland, Public School System will coordinate and expand the links between those efforts whose goal it is to increase the number of minorities in mathematics, science and technology-related careers.

Curriculum reform efforts will yield an integrated curricular framework in mathematics and science which includes instructional resource support materials.

Teacher enhancement and staff development efforts will build upon the "lead teacher" concept already established in the district's schools to create School Science and Mathematics Leadership Teams. Within each of the district's five administrative areas, cluster or feeder schools will come together as School Partnership Teams, thereby constituting Kindergarten through grade 12 field study laboratories.

Oversight and coordination for all existing and proposed initiatives and resources for staff and students will be the primary responsibility of the Project Director and designated school system staff, working with an advisory committee representing a broad spectrum of agencies, organizations, consultant "experts" and other school communities. The PMSA Advisory Board will review and advise staff regarding such issues as priority areas of focus; teacher, student and parent activities; outreach initiatives; and process and product evaluations for the efforts undertaken through the grant.

Student enrichment activities will include mentoring, tutoring and role model programs, Saturday and summer enrichment programs involving such groups as the National Society for Black Engineers, Black Men United, and a variety of religious and community groups.

HRD-9255353
Monds, Lula
Durham Public Schools
Durham, NC

"PMSA Mathematics and Science Achievement Program"

The Durham City Schools and the Durham County Schools have established a partnership with the University of North Carolina Mathematics and Science Education Network to improve the achievement of minority students in mathematics and science. The Mathematics and Science Achievement Project uses the successful existing model of the MSEN pre-college program and extends it to reach elementary students and increased numbers of middle and high school students.

The Mathematics and Science Achievement Project uses in-school activities with minority students in the primary grades, elementary clubs

for minority students in the intermediate grades, in-school enrichment classes and university programs for minority students in middle school, and after clubs and university programs for minority students in high school. Teachers will be given training in extending the mathematics and science curriculum and in bias-free classroom teaching techniques. Parents will be given advocate training.

HRD-9255365
Despenas, Susan
Santa Ana Unified School Dist.
Santa Ana, CA

"Partnerships for Reform In Science and Mathematics (PRISM)
(Previous Title K.I.D.S.)

PMSA's Partnership for Reform in Science and Mathematics (PRISM) is a broad-based academic partnership designed to increase the participation and achievement of minorities in science and mathematics in the Santa Ana Unified School District (SAUSD), and to serve as a science and mathematics education reform model for the nation. Partners include students, and faculty and staff from SAUSD (with over 48,000 students--94.5% Latino, African-American, and Asian) and from the surrounding community, including four postsecondary institutions; community-based organizations; and the civic and corporate/business sectors. This unique partnership is focused on creating successful academic experiences and pathways in science and mathematics at the K-12 level to encourage and enable students from underrepresented groups to pursue careers in science, engineering, and mathematics fields.

PRISM was established in 1992 with funding for up to three years from the National Science Foundation Partnerships for Minority Student Achievement (PMSA) program and considerable inkind support from the partner members in Project STEP--which includes the University of California, Irvine (UCI); California State University, Fullerton (CSUF); Chapman University (CU); Rancho Santiago Community College (RSC); and SAUSD. Based on the foundation of trust and communication developed in STEP, PRISM is moving forward aggressively on several teacher-driven initiatives in areas essential for systemic changes in science and mathematics education, curriculum reform, teacher enhancement, and student enrichment activities. The PRISM alliance has helped to implement district-wide reform of curriculum through the SS&C Curriculum Committee and PRISM Training of trainers teacher enhancement programs, which are designed to develop staff leadership incentives and practical "hands-on, minds-on" learning experiences for both students and teachers. Initial project successes are due in large part to teacher creativity and willingness to risk news instructional approaches to engage all students in the excitement of real-world scientific discovery and investigation. The PRISM-sponsored 1993 Santa Ana High School Summer Institute introduced intermediate grade level students to preparing research proposals for the 1993-1994 school year in the SAHS Research Center through participation in outdoor investigation, computer-assisted data organization and treatment project presentations, and individual;l and team investigations and recognition. Supporting these efforts is the PRISM Database, an extraction of the SAUSD database which is designed to monitor and track the course enrollment and performance in science and mathematics of every student in the district from the sixth through twelfth grades.

Extensive leveraging of resources has been a critical component of PRISM's initial success, especially in light of the fiscal constraints faced by California public institutions: The "Discipline Dialogues," which have generated inter-institutional faculty-driven projects, are supported additionally through funding secured by UCI from FIPSE (the Fund for the Improvement of Post-Secondary Education), and by RSC from the Ford Foundation. "STAR BRIDGE," A student and faculty initiated project based on academic credit for community service learning opportunities in the Santa Ana schools and neighborhoods, last year organized 96 UCI undergraduates who put in over 5,000 hours of service

and served 2,880 K-12 students. The PRISM Database itself is an outstanding example of strategic collaboration, contributing to a K-16 initiative which has published the first annual;l STEP Educational Data Almanac, an internal document created to help track student progress from Kindergarten through college graduation.

PRISM's primary focus in the Santa Ana High School "cluster" of schools in the Santa Ana district (one high school, three middle schools and nine "feeder" elementary schools) significantly impacts a student population of over 12,000 students annually, and is projected to directly involve a total of 400 K-12 teachers; 75 faculty and 300 students at the postsecondary level. 1,000 parents and 55 corporate/industry representatives in SEM fields over three years. Through newly adopted curricular reforms and staff development programs assisted by PRISM lead teachers, it has already begun to influence the science curriculum and instructional approaches of teachers throughout the district, and is in a good position now to produce a range of products and effects toward a national model of systemic school reform for the improvement of science and mathematics education for minority students.

HRD-9255354
Llewellyn, Douglas
Rochester City School Dist.
Rochester, NY

"Rochester Partnerships for Minority Student Achievement"

The Rochester City School District (RCSD) received nearly $500,000 from NSF for the first year of a three-year Partnership for Minority Student Achievement (PMSA) Project. The District has a 72-percent minority student population enrolling the second highest number of African-American students of any city in New York State. It is the goal of the Rochester PMSA to increase by 500% the number of African-American and Hispanic students enrolling in college-level science, math, and engineering programs, from a 1990-91 baseline number of less than 50 to over 240 in 1997-98.

PMSA funding allows Rochester to better coordinate and expand its citywide K-12 mathematics and science education partnerships. Over three years, 100 K-6 generalist teachers and 100 seventh and eighth grade mathematics and science teachers will participate in summer and school-year professional development programs. Concurrently, 300 seventh and eighth grade students in three of the highest-need middle schools will engage in intensive summer and school-year enrichment activities in mathematics, science and technology.

The Rochester City School District coordinates project services, working with a project Advisory Committee, comprised of teachers, parents, and representatives of business and industry higher education institutions, pre-college minority access programs, and stakeholder agencies. The Winters Group is conducting a five-year longitudinal study tracking and analyzing improved minority student academic achievement and other related "systemic change" issues over a five-year period.

Spin-off" initiatives, made possible due to the formal partner linkaging that occurred this past year, include: 1) Development of the Rochester Engineering Entry Program, a high school pre-engineering curriculum culminating in a for-credit college-level course in the senior year. This project is not in its pilot year; 2) Approval of American Association for the Advancement of Science/Science Linkages in the Community (AAAS/SLIC) grant, targeting Hispanic students for science enrichment activities; 3) Approval of New York State Education Department "Star School," linking one local elementary school via computer to schools across the state; and 4) Approval of NSF/Statewide Systemic Initiative grant, allowing for the development of three to six "Break-the-Mold" schools, encouraging innovation in science and math education.

Cash and in-kind contributions to the Rochester partnership are estimated at $3,000,000 annually. An additional 600 K-12 students will participate in mentoring and

enrichment activities and 100 ninth through twelfth grade teachers will participate in related inservice activities through non-NSF funding of the partnership over the next three years. PMSA partners include: the Eastman Kodak Company, Xerox, Rochester Institute of Technology, University of Rochester, Monroe Community College, State University of New York College at Brockport, the Challenger Learning Center, PRISM, the Rochester NAACP, the Rochester Brainpower Alliance, and the Rochester Branch of Effective Parenting Information for Children.

Directorate for Education and Human Resources
Division of Human Resource Development

Partnerships for Minority Student Achievement (PMSA)
FY 1993
Project Abstracts

HRD-9353592
Howell, David, Antonio Lasaga, Glenn Cassis and Rozette McGowan
New Haven City School Dist.
New Haven, CT

"New Haven P.M.S.A. "Pathway" Project"

New Haven's "Pathway" Project will lead systemic change (K-12) in SEM curriculum over five years. Concurrent strategic use of resource, staff development, and a coordinated, year-round program of SEM activities and enrichment will achieve: (1) evidence of the change in a "pathway" set of 6 schools (2 elementary, 2 middle, 2 high) within two years and throughout the 18,000 pupil K-12 district in five years; (2) minority participation in math and science gatekeeping courses by Grade 9 at 85% of enrollment; (3) minority students qualified to enter four-year post secondary SEM programs at 70% of enrollment; (4) engagement of 60% of the district's K-6 teachers and 100% of its Grade 7-12 SEM teachers in significant staff development activity; (5) doubling of District financial commitment for SEM textbooks, supplies, materials and equipment, and SEM staff increase proportional to enrollment increase; (6) dissemination of project innovations, guidelines, and cost-effectiveness of the model.

Strong emphasis in New Haven;s PMSA project will be placed on equitable gender participation, parent involvement, and role modeling and mentoring for younger students. The project will focus on "hands-on," interdisciplinary learning in the classroom and complementary discovery approaches in a variety of K-12 enrichment activities. Project partners include: five Yale University schools and departments, Southern Connecticut State University, Gateway Community and Technical College, the New Haven Chamber of Commerce, the Connecticut Academy (CT SEE), the Connecticut Pre-Engineering Program, the Eli Whitney Museum, the Urban League, and the Center San Jose Center. Bank Street College's Center for Education and Technology will evaluate the project. A total of 18,000 K-12 students and 420 teachers will be served directly through the New Haven PMSA program. Eighty-four percent of NHPS students are African-American or Hispanic; 32 percent live in poverty.

HRD-9353597
Coleman, Rose and Dave Hoefakker
Normandy School Dist.
St. Louis, MO

"Environments for Excellence: A Model for Increasing Science & Mathematics Enrollment in an Inner-Suburban Minority District."

Normandy School District in suburban St. Louis County Missouri has experienced dramatic change. Today, enrollment is 95% black. A generation ago it was 80% white. Student performance by most measures is fair to poor, with most nationally normed test revealing most Normandy students as "below average." Recently, however, the district has made important strides toward improvement. A strategic planning process helped residents and staff focus on critical areas. Partnerships with local business and the University of Missouri-St. Louis have resulted in significant improvements and nationally recognized programs. The percent of

graduating students going on to further education has increased. Today, as the district prepares to mark its centennial, it is proposing the Environments for Excellence program as the platform for fundamental science and mathematics curriculum change that will result in substantially more minority students completing a four year science/mathematics high school curriculum to prepare for higher education and careers in science, engineering and mathematics.

The goals of Environments for Excellence are: 1) to have more than half of all students enter 9th grade having successfully completed algebra at the end of the fourth and fifth years of the project; 2) to double the number of high school students enrolling in a four-year science and/or mathematics sequence by the end of the third program year and to achieve a further fifty percent increase by the end of the fifth year; 3) to develop, implement and assess a "major investigation" exit competency for students. Specific intervention strategies include curriculum reform, teacher enhancement and student enrichment programs. Objectives include: 1) extensive staff development for hands-on lessons and action research teams, 2) expanded enrichment activities, 3) a new middle school experiential transition unit, 4) a new K-12 science/math Buddy System which links students at all levels including the university, 5) new Independent Study curriculum modules for high school students leading to an exit competency based on Project 2061 concepts, and 6) and Essential Friends volunteer corps of community and university guest teachers who can demonstrate practical applications of schooling.

The project is a teacher-driven, staff development oriented model. In partnership with the Network for Educational Development and the university, summer workshops and collaborative action research teams will provide on-going development opportunities to Normandy teachers with a focus on improved teaching strategies and methodologies. The staff will implement a thematic, "beyond the classroom" 2-week transition experience at the start of each school year for all middle school students to improve science and mathematics learning readiness. This will be accomplished in partnership with Camp Wyman, a respected local outdoor education program, and University. The present award-winning science/math enhancement programs (University partnership) will be expanded to all schools in the district. A new link between the middle and high school enhancement components will be implemented. The five year program is designed to reach directly over 800 minority middle and high school students each year - and through teaching strategies and methods for hands-on science, over 3000 minority elementary students. Evaluation is designed and guided by the University of Missouri - St. Louis.

HRD-9353637
McAdoo, Eugene, Jean Adenika-Morrow and Charles Jackson
Los Angeles Unified School Dist
Los Angeles, CA

"Region C Partnership for Minority Achievement"

Los Angeles Unified School District, Administrative Region C (LAUSD) in partnership with the School of Education, California State University, Los Angeles (CSULA) will build upon their long standing collaboration with professional experts in the Science and Mathematics faculty, of the School of Natural and Social Science and with the Science and Mathematics Education faculty in the School of Education, to expand the capability within 40 targeted inner city racially isolated schools to more effectively meet the needs of their African American (appx. 40%) and Latino/Hispanic American (appx. 60%) pupils. The Project will serve 58% of the 90,793 students and 41% of the 6573 teachers within the targeted geographical area, and all the administrators of the 40 schools. The two are committed to leveraging, evidenced by a 31% share of total project cost with NSF.

This five year project is designed to improve Science and Mathematics academic achievement (currently averaging in the 1st and 2nd

quartile on standardized test scores) in 27 elementary, 8 middle and 5 senior high schools in preparation of Region C's target minority students for postsecondary education experiences. Intensive Level 1 activities will be provided for grades 4,5,6,8,9&10, with all students, K-12, receiving Level 2 activities. The Project will actively address student interest, motivation on study, excitement about and involvement in science and mathematics activities. At the same time, self-concept and cross cultural issues imperative to project success will guide student academics and postsecondary education requirements and directives.

The mission is one of systemic modification of current practices to utilize or improve upon interventions that have been shown through research to produce increased numbers of African American and Latino/Hispanic American students who take college preparatory courses (Algebra, Biology, Chemistry, Physics, Calculus and Geometry) and subsequently enter Science, Mathematics or Engineering at the University. The projected impact is to double the number of students who enter and complete college preparatory courses in 12 months with a 2.5 or better. In addition, the number of K-9 students who successfully enter Science/Math Fairs, EXPOS and Olympiad within 12 months is projected to double.

Project activities will be conducted at the school site, the University, in the field, and during visits to participating technological organizations and industries. Interventions are primarily planned for the students. Examples are elementary extended day math discovery teams, CSULA math/science Camps and tutoring; middle school science/math clubs, and 8th grade CSULA Institutes-Algebra Ready!/Teen Science!; and senior high 9th-'Algebra, Language Dev/Mentoring Initiative and 10th-Academic Development Course. The project has designed auxiliary support activities for the targeted students, teachers, parents, and all school site administrators.

The PMSA Partnership Project is designed so that as desired outcomes are associated with practices old, new or in combination, the practices will be integrated into the culture and financial fabric of the school in efforts to institutionalize strategy, attitude and group behavior. The Region C-LAUSD/School of Education-CSULA program design will track and disseminate the outcomes statewide to assist the local and state initiatives for improving science and math education for its multiethnic population to attain increasing numbers of pupils who are prepared to attend postsecondary education institutions in the sciences.

HRD-9353644
Zendejas, Esperanza, Sylvia Perez, and Ray Ramirez
Brownsville Independent School Dist.
Brownsville, TX

"Brownsville Engineering Alliance for Minorities Project"

The PMSA Project Beam is designed to impact and address the need for career access opportunities in mathematics, science, and technology in the Brownsville metropolitan area of South Texas. it is a 5 year intervention model for preparing life-long better schools for elementary/secondary hispanic students, particularly those with a preponderance of culturally or social-economically diverse student from traditionally disadvantaged populations. The goals are : (1) to systematically and comprehensively increase the number of precollege minority students (current enrollment-37,974) in the Brownsville Independent School District in the science, engineering, and mathematics pipeline, (2) o influence the quality of mathematics and science education from K-12, (3) to seek innovative science, mathematics, and technology approaches to strengthen student achievement and teacher functioning, and (4) to help improve the quality of education through SEM career preparation and access. The project staff include school district area administrators, coordinators, curriculum specialists, teaching and counseling personnel, and faculty from the

University of Texas at Brownsville and Texas Southmost College. The BISD Board of Trustees approved the district's commitment and in-kind financial support to the project and has made a funding commitment to support the project activities as NSF funding ceases.

HRD-9353645
Potter, Paula, Harry Reynolds and Edward Greene
Chattanooga Public Schools
Chattanooga, TN

"Accessing Accelerated Achievement"

Accessing Accelerated Achievement in Science and Mathematics for Minority Students (AAA) is a five-year teacher development and student support program designed to increase the number of minority students who pursue upper-level secondary and college level studies in the areas of science, mathematics, engineering and technology., The project is a joint venture between the Chattanooga Public Schools, Ventures in Education, the National Paideia Center, the Southeast Consortium for Minorities in Engineering (SECME), the University of Tennessee at Chattanooga, the Lawrence Hall of Science's Project Equals, and others. AAA aims to increase student participation in the math and sciences by increasing the level of expectation for all students, while simultaneously redefining the teaching and learning equation in elementary, middle, and high school classrooms. Included in the redefinition of math and science are: interdisciplinary planning teams, the Socratic seminar, cooperative learning, Hawaii Algebra and Hawaii Geometry, science/technology exhibitions, and the implementation of authentic student assessment processes. Strong emphasis has been placed on incorporating reading and writing to learn strategies in mathematics and science classrooms at all grade levels. Implementation of the many classroom innovations will be facilitated by the project's three full-time lead teachers.

Beyond the reform of teaching and learning at the classroom level, a number of intervention programs have been selected to enhance minority student performance and attitudes as well as parental participation. These include student visits to regional university campuses, Family Math and Family Science, SAT/PSAT preparation courses, SECME programs, and science camps. Project monitoring and evaluation will be facilitated through the implementation of Hall and Hord's Concerns-Based Adoption Model and the use of numerous traditional and alternative modes of student and teacher assessment.